IN THE CLAIMS

1. (original[1]) A computer method, comprising executing at least the following operations in at least one data processing device:

- using a pre-established DTD corresponding to desired XML; and

- based on the DTD and a plurality of data sources, adding annotations to the DTD to create an annotated DTD, such that an XML document generated from the annotated DTD is guaranteed to conform to the DTD

establishing a mapping from lists and scalars corresponding to at least one data source into XML elements and attributes.

2. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 1.

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3. (original[2]) A data processing device comprising:

-       the at least one medium according to claim 2, and

-       at least one processor configured to use the at least one medium to produce the XML document based on the mapping.

4-6. (cancelled)

7. (previously presented) The method of claim 1, wherein at least one of the data sources is a relational database.

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[1] Returned to original form after amendment
[2] Returned to original form after amendment

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8. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 7.

9. (original[3]) A data processing device comprising

- the at least one medium according to claim 8; and

- at least one processor configured to use the at least one medium to produce the XML document based on the mapping.

10. (original[4]) The method of claim 1, further comprising executing the following operation in the data processing device: expressing the mapping in constructs of a mapping language.

11. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 10.

12. (original[5]) A data processing device comprising

- the at least one medium according to claim 11; and

- at least one processor configured to use the at least one medium to produce an XML document based on the mapping.

13-15 (cancelled).

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[4] returned to original form after amendment
[5] returned to original form after amendment

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16. (previously presented) The method of claim 90, wherein the constructs comprise at least one of a value specification and a binding specifications.

17. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 16.

18. (original) A data processing device comprising:

-    the at least one medium according to claim 17; and

-    at least one processor configured to use the at least one medium to produce an XML document based on the annotated DTD.

19. (previously presented) The method of claim 90, wherein

- at least one of the constructs comprises at least one parameter;

- the at least one of the constructs is adapted so that a value of the at least one of the parameters is determinable at a time of generation of at least one respective XML element associated with the at least one of the constructs.

20. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 19.

21. (original) A data processing device comprising:

-    the at least one medium according to claim 20; and

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- at least one processor configured to

    - use the at least one medium to produce an XML document based on the

    mappingconstructs; and

    - pass the value to the parameter.

22. (currently amended) The method of claim 90+, further comprising executing the following

operation in the data processing device: associating values and or formulas with <u>the annotateda</u>

DTD.

23. (original) At least one medium readable by a data processing device and embodying at least

one result of the method of claim 22.

24. (original[6])A data processing device comprising:

-       the at least one medium according to claim 23; and

-       at least one processor configured to

    - use the at least one medium to produce an XML document based on the mapping;

    and

    - perform the associating operation.

25. (original) The method of claim 22, wherein the associating includes associating one or more

lists of data objects or formulas producing data objects with each DTD construct having a

repetition symbol at the end.

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[6] returned to original form after amendment

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26. (original) At least one medium readable by a data processing device and embodying at least

one result of the method of claim 25.

27. (original[7]) A data processing device comprising:

-     at least one medium according to claim 26; and

-     at least one processor configured to

        -     use the at least one medium to produce an XML document; and

        -     perform the associating operation.

28. (original) The method of claim 22, wherein the associating includes associating one or more

lists of data objects or formulas producing data objects with each DTD construct which is not a

#PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

29. (original) At least one medium readable by a data processing device and embodying at least

one result of the method of claim 28.

30. (original[8]) A data processing device comprising:

-     the at least one medium according to claim 29; and

-     at least one processor configured to

        -     use the at least one medium to produce an XML document based on the mapping;

       and

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[7] returned to original form after amendment
[8] returned to original form after amendment

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- perform the associating operation.

31. (original) The method of claim 22, wherein associating includes associating a value or

formula producing a value with each PCDATA, choice list, or attribute definition.

32. (original) At least one medium readable by a data processing device and embodying at least

one result of the method of claim 31.

33. (original[9]) A data processing device comprising:

- the at least one medium according to claim 32; and

- at least one processor configured to

  - use the at least one medium to produce an XML document; and

  - perform the associating operation.

34. (original) The method of claim 22, wherein associating includes, not necessarily in the

following order:

- first associating one or more lists of data objects or formulas producing data objects with a

  DTD construct;

- second associating at least one of the lists or formulas with at least one variable name; and

- using the variable name as a parameter in at least one other formula.

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[9] returned to original form after amendment

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35. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 34.

36. (original[10]) A data processing device comprising:

-       the at least one medium according to claim 35; and

-       at least one processor configured to

-       use the at least one medium to produce an XML document; and

-       perform the associating operation and included operations.

37. (original) The method of claim 1, further comprising executing the following operation in the data processing device: associating at least one respective environment with a respective XML element to be generated.

38. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 37.

39. (original[11]) A data processing device comprising:

-       the at least one medium according to claim 38; and

-       at least one processor configured to

-       use the at least one medium to produce an XML document; and

-       perform the associating operation.

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[10]returned to original form after amendment
[11] returned to original form after amendment

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40. (original) The method of claim 37, wherein the at least one environment comprises

* information from a parent XML element of the respective XML element; and

* information from a binding specification of a DTD construct associated with the respective XML element.

41. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 40.

42. (original[12]) A data processing device comprising:

-        the at least one medium according to claim 41; and

-        at least one processor configured to

    -        use the at least one medium to produce an XML document; and

    -        perform the associating operation.

43. (original[13]) The method of claim 37, wherein

* the mapping includes at least one respective specification corresponding to at least one respective XML element;

* the specification comprises at least one parameter for receiving a value upon generation of an XML document; and

* the method further comprises, upon generation of an XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment.

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[12]returned to original form after amendment
[13] returned to original form after amendment

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44. (original) At least one medium readable by a data processing device and embodying at least

one result of the method of claim 43.

45. (original[14]) A data processing device comprising:

-       the at least one medium according to claim 44; and

-       at least one processor configured to

    -       use the at least one medium to produce an XML document; and

    -       perform the associating and sending operations.

46. (original)[15] At least one medium readable by at least one data processing device and

embodying software adapted to perform operations comprising: establishing a mapping from lists

and scalars corresponding to at least one data source into XML elements and attributes.

47. (canceled)

48. (original) The at least one medium of claim 46, wherein the data source is a relational

database.

49. (original[16]) The at least one medium of claim 46, wherein the operations further comprise:

expressing the mapping in constructs of a mapping language.

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[14] returned to original form after amendment
[15] returned to original form after amendment
[16] returned to original form after amendment

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50. (canceled)

51. (currently amended) The at least one medium of claim 94, wherein the constructs comprise at least one of a value specification and a binding specifications.

52. (previously presented) The at least one medium of claim 94, wherein

- at least one of the constructs comprises at least one parameter; and

- the at least one of the constructs is adapted so that a value of the at least one of the parameters is determinable at a time of generation of at least one respective XML element associated with the at least one of the constructs.

53. (currently amended) The at least one medium of claim 9446, wherein the operations further comprise associating values and or formulas with the annotateda DTD.

54. (previously presented) The at least one medium of claim 53, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct having a repetition symbol at the end.

55. (original) The at least one medium of claim 54, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct

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which is not a #PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

56. (original) The at least one medium of claim 54, wherein associating includes associating a value or formula producing a value with each PCDATA, choice list, or attribute definition.

57. (original) The at least one medium of claim 54, wherein associating includes, not necessarily in the following order:

- first associating one or more lists of data objects or formulas producing data objects with a DTD construct;

- second associating at least one of the lists or formulas with at least one variable name; and

- using the variable name as a parameter in at least one other formula.

58. (original) The at least one medium of claim 46, wherein the operations further comprise associating at least one respective environment with a respective XML element to be generated.

59. (original) The at least one medium of claim 58, wherein the at least one environment comprises

- information from a parent XML element of the respective XML element; and

- information from a binding specification of a DTD construct associated with the respective XML element.

60. (currently amended) The at least one medium of claim 58, wherein

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- the mapping includes at least one respective specification corresponding to at least one respective XML element;

- the specification comprises at least one parameter for receiving a value upon generation of an XML document; and

- the method further comprises, upon generation of the an XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment.

61. (original[17]) At least one data processing device comprising:

- means for receiving data from at least one data source;

- at least one processor adapted to perform operations comprising: establishing a mapping from lists and scalars corresponding to the data into XML elements and attributes.

62. (canceled)

63. (previously presented) The at least data processing device of claim 61, wherein

- the at least one data source comprises at least two data sources, and the data sources are of different types; and

- the data source is a relational database.

64. (original[18]) The at least one data processing device of claim 61, wherein the operations further comprise: expressing the mapping in constructs of a mapping language.

[17] returned to original form after amendment
[18] returned to original form after amendment

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65. (cancelled)

66. (currently amended) The at least one data processing device of claim 64, wherein the constructs comprise at least one of a value specification and a binding specifications.

67. (original) The at least one data processing device of claim 64, wherein

- at least one of the constructs comprises at least one parameter; and

- the at least one of the constructs is adapted so that a value of the at least one of the parameters

   is determinable at a time of generation of at least one respective XML element associated

   with the at least one of the constructs.

68. (currently amended) The at least one data processing device of claim 96~~61~~, wherein the operations further comprise associating values and or formulas with the annotated ~~a~~ DTD.

69. (original) The at least one data processing device of claim 68, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct having a repetition symbol at the end.

70. (original) The at least one data processing device of claim 68, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct which is not a #PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

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71. (original) The at least one data processing device of claim 68, wherein the associating includes associating a value or formula producing a value with each PCDATA, choice list, or attribute definition.

72. (original) The at least one data processing device of claim 68, wherein the associating includes, not necessarily in the following order:

- first associating one or more lists of data objects or formulas producing data objects with a DTD construct;

- second associating at least one of the lists or formulas with at least one variable name; and

- using the variable name as a parameter in at least one other formula.

73. (original) The at least one data processing device of claim 61, wherein the operations further comprise associating at least one respective environment with a respective XML element to be generated.

74. (original) The at least one data processing device of claim 73, wherein the at least one environment comprises

• information from a parent XML element of the respective XML element; and

• information from a binding specification of a DTD construct associated with the respective XML element.

75. (currently amended) The at least one data processing device of claim 73, wherein

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- the mapping includes at least one respective specification corresponding to at least one respective XML element;

- the specification comprises at least one parameter for receiving a value upon generation of an XML document; and

- the method further comprises, upon generation of thean XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment

76. (currently amended) The method of claim 1, wherein

- the at least one data source comprises multiple heterogenous data sources; and

- the method further comprises

    - using a pre-established DTD corresponding to the multiple heterogeneous data sources; and

    - based on the DTD and the multiple heterogeneous data sources, adding annotations to the DTD to create an annotated DTD, such that an XSML document generated from the annotated DTD is guaranteed to conform to the DTD.

77. (previously presented) At least one medium readable by a data processing device and embodying at least one result of the method of claim 76.

78. (previously presented) A data processing device comprising:

- the at least one medium according to claim 77; and

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- at least one processor configured to use the at least one medium to produce the XML

  document based on the mapping.

79. (currently amended) The medium of claim 46, wherein

- at least one data source comprises multiple heterogenous data sources; and

- the operations further comprise

  - using a pre-established DTD corresponding to the multiple heterogeneous data sources ;

    and

  - based on the DTD and the multiple heterogeneous data sources, adding annotations to the

    DTD to create an annotated DTD, such that an XSML document generated from the

    annotated DTD is guaranteed to conform to the DTD.

80. (currently amended) The data processing device of claim 61, wherein

- the at least one data source comprises multiple heterogenous data sources; and

- the operations further comprise

  - using a pre-established DTD corresponding to the multiple heterogeneous data sources;

    and

  - based on the DTD and the multiple heterogeneous data sources, adding annotations to the

    DTD to create an annotated DTD, such that an XSML document generated from the

    annotated DTD is guaranteed to conform to the DTD.

81. (previously presented) The method of claim 1, wherein the mapping returns at least one

scalar value, at least one list of scalar values, and at least one SQL call result.

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82. (previously presented) The medium of claim 46, wherein the mapping returns at least one scalar value, at least one list of scalar values, and at least one SQL call result.

83. (previously presented) The data processing device of claim 61, wherein the mapping returns at least one scalar value, at least one list of scalar values, and at least one SQL call result.

84. (previously presented) The method of claim 1, wherein the mapping is responsive to a user mapping specification.

85. (previously presented) The medium of claim 46, wherein the mapping is responsive to a user mapping specification.

86. (previously presented) The data processing device of claim 61, wherein the mapping is responsive to a user mapping specification.

87. (previously presented[19]) The method of claim 1, wherein the at least one data source comprises at least two data sources, and the data sources are of different types.

88. (previously presented[20]) At least one medium readable by a data processor and embodying at least one result of the method of claim 87.

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[19]originally claim 4
[20]originally claim 5

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89 (previously presented[21]) A data processing device comprising:

- the at least one medium according to claim 88; and

- at least one processor configured to use the at least one medium to produce an XML

    document based on the mapping.

90 (previously presented[22]). The method of claim 10, further comprising executing the following

operation in the data processing device: inserting the constructs into a DTD to create an

annotated DTD.

91(previously presented[23]) At least one medium readable by a data processing device and

    embodying at least one result of the method of claim 90.

92. (previously presented[24]). A data processing device comprising:

- the at least one medium according to claim 91; and

- at least one processor configured to

    - use the at least one medium to produce an XML document based on the mapping;

        and

    - perform the inserting operation.

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[21]originally claim 6
[22]originally claim 13
[23]originally claim 14
[24]originally claim 15

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93. (previously presented[25]) The at least one medium of claim 46, wherein the at least one data source comprises at least two data sources, and the data sources are of different types.

94 (currently amended[26]). The at least one medium of claim 46, further comprising executing the following operation in the data processing device: inserting ~~the~~ constructs of a mapping language into a DTD to create an annotated DTD.

95. (previously presented[27])   The at least one data processing device of claim 61, wherein the at least one data source comprises at least two data sources, and the data sources are of different types.

96. (previously presented[28]) The at least one data processing device of claim 64, further comprising executing the following operation in the data processing device: inserting the constructs into a DTD to create an annotated DTD.

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[25]originally claim 47
[26] originally claim 50
[27] originally claim 62
[28]originally claim 65

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